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# IT Foundations for E-commerce: A Survey of Executives in Five Caribbean Countries

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## ABSTRACT

Electronic commerce represents an important opportunity for businesses in developing countries, yet previous research has shown significant barriers to success. Common barriers are internet access, web hosting, web site visibility, logistics, and electronic funds transfer. During July and August 2004 the principle investigators visited business executives in five Caribbean nations to determine how these executives were overcoming known ecommerce difficulties. 36 businesses and government agencies were interviewed. Executives described a number of successful strategies to work around common problems. The authors hope the results of this study will suggest improved strategies for SMEs in developing countries seeking to use e-commerce to expand their markets.

## Keywords

e-commerce, developing countries, information infrastructure, Caribbean business, logistics, banking

## INTRODUCTION

E-commerce may represent an important opportunity for developing countries to export their products and improve their balance of payments. Yet we know from the massive failures of e-commerce companies in the U.S. that business-to-consumer (B2C) e-commerce is particularly demanding. Beyond the obvious requirements of internet access, they need to find a web hosting service, handle electronic funds transfer, and find the logistics support to ship products around the world at the speed that e-commerce customers expect. In short, e-commerce requires significant business acumen and technical support structures.

Previous studies have found many companies in developing countries experiencing only limited successes through this new sales channel. A recent study of nine least developed nations (Wresch, 2003) found executives at Small and Medium Enterprises (SMEs) were finding little growth in sales from their web sites, and were having significant difficulties gaining visibility through search engines and shipping products to remote markets. Annual reports from the United Nations Conference on Trade and Development (E-Commerce and Development) enumerate significant IT barriers facing SMEs in all parts of the world.

While these barriers are significant and persistent, one of the main barriers faced by owners of small businesses is knowledge. UNCTAD's E-Commerce and Development Report 2003 summed up the situation by noting that lack of knowledge of best practice in the use of ICT was the first deficiency that policy makers in developing countries must address in order to stimulate higher returns on ICT investments. The purpose of the current study was to visit successful business leaders in five Caribbean nations to help identify best practices. It is our hope that by identifying successful technical and business strategies used by the successful companies we visited, other companies can model their own efforts after these leaders.

## BACKGROUND

Previous studies of electronic commerce in developing nations call attention to difficulties in five technological foundation areas: telephony and internet access, site development and hosting, site visibility on search engines, logistics, banking and security.

### Telephony and Internet Access

The United Nations Development Program (2002) tracks the creation of the information infrastructure around the world. Its figures illustrate the disparity in basic telephone and internet access between countries. Table 1 presents the UNDP's summary numbers for developed nations, and for developing nations in the Caribbean, Africa, and Latin America. The table illustrates the Caribbean's relative position amongst developing nations.

<b>Caribbean</b>	<b>Population 2002 (Millions)</b>	<b>GDP Per Capita PPP US\$ (2002)</b>	<b>Telephone mainlines (per 1000 people (2002)</b>	<b>Internet Users per 1000 people 2002)</b>
Barbados	0.3	15,290	494	111.5
Guyana	0.8	4,260	92	142.2
Jamaica	2.6	3,980	169	228.4
Trinidad and Tobago	1.3	9,430	250	106.0
<b>Africa</b>				
Nigeria	120.9	860	5	3.5
Ghana	20.5	2,130	13	7.8
Kenya	31.5	1,020	10	12.5
Zimbabwe	12.8	2,370	25	43.0
<b>Latin America</b>				
Brazil	176.3	7,770	223	82.2
Argentina	38.0	10,880	219	112.0
Chile	15.6	9,820	230	237.5
Venezuela	25.2	5,380	113	50.6
<b>Developed</b>				
Australia	19.5	28,260	539	481.7
Canada	31.3	29,480	635	512.8
Finland	5.2	26,190	523	508.9
France	59.8	26,920	569	313.8
UK	59.1	26,150	591	423.1
USA	291.8	35,750	646	551.4

Table 1. Comparative Telephone and Internet Access

These figures are summed up in a recent United Nations report as follows: “while in developed countries about one-third of the population uses the Internet, in the developing world the corresponding figure is eight times lower.” (UNCTAD, 2003, p9). The Caribbean nations visited have somewhat better telephony infrastructures than other developing nations – especially in Africa – but they still have far few resources than found in wealthier nations.

#### Site Development and Hosting

Should businesses be able to connect to the Internet, their next problem is web site development and web hosting. The added sophistication that is now commonplace with web sites requires technical expertise and local carrier bandwidth that may not be available. UNCTAD figures state that 89 percent of the world’s internet hosts are located in North American and Europe. And the number of Internet hosts is growing faster in the developed countries than in the developing world (UNCTAD, 2003). As a consequence, while in 2002 the number of Internet users per 10,000 people was 53 times larger in North America than in Africa, in the same year the proportion between the numbers of Internet hosts per 10,000 people living in those two regions was 984 to 1, which is to say that an internet user in the U.S. was roughly one thousand times more likely to have a local internet host than a person living in Africa.

This use of hosting sources in the U.S. is so significant that a whole industry has been built around it, with one source listing the value of the U.S. hosting market at \$5.5 billion in 2003, projected to grow to \$10.4 billion by 2008 (Bednarz, 2004). Individually, companies in developing countries are able to save costs by using resources in the U.S., but the cumulative impact has been to support web innovation and hosting revenues in the U.S. with significantly less growth occurring in developing nations. If there is a benefit to this hosting arrangement, we may see it in particular industries. “It may be preferable to host information about a tourist destination on a server located in or near the countries where the potential tourists reside.” (UNCTAD, p9)

#### Site Visibility

By one estimate, 428 million unique web searches are conducted each day (Broersma, 2004). Another source asserts that 81% of web users find the sites they want through search engines (Swartzendruber, 2003). Both figures remind us of how crucial search engines are. They provide the “front door” to online businesses. Yet misunderstanding of the search process is rampant, with one study showing 82% of businesses didn’t even register their site with a search engine (Thelwall, 2000).

These searches are particularly important for smaller firms since they do not have an international brand name that would easily draw users to their site (e.g. nike.com, pepsi.com). Only a search engine will help potential customers find their business. Yet we know that SMEs are particularly vulnerable to being buried amidst the millions of commercial web sites in existence, with their site URL buried under hundreds of other listings for whatever product they sell. This invisibility during the search process was one of the chief complaints listed by companies surveyed during a study of small exporting companies in developing nations (Wresch, 2003). With no funds to purchase a position on these search engines, and limited understanding of how search engines seek out key attributes of sites, SMEs have frequently found that their web site is a needle in a haystack that generates few business leads. Gaining visibility for their web site is an early e-commerce barrier for small firms in developing nations.

One response has been to create national web sites such as Costa Rica's site ([www.marketplacecostarica.com](http://www.marketplacecostarica.com)) containing a database of Costa Rican companies and export products. Such national efforts provide some support for small businesses and improved visibility for national products. But just as in any other site, such collective web sites need to be promoted in order to gain any visibility.

### Logistics

If companies choose to sell a tangible product over the internet, they are responsible for shipping the product to the consumer. In the U.S. the shipment of consumer goods has been ongoing for over a century and multiple delivery modes have evolved from railroads to trucks, to next-day air delivery services. E-commerce arrived as a business strategy only after the logistical infrastructure had been in place for generations. In the developing world, basic logistical systems are still being created. In their description of e-commerce activities in sub-Saharan Africa, Okoli and Mbarika note that only 15% of the roads there are paved, 66% of the population lives in rural areas hard to reach, postal systems are slow and experience a high incidence of theft among postal workers, and courier services exist but are very expensive (Okoli, 2003).

Meanwhile, world shippers report being wary of doing business with developing countries. "Technology in developing countries is very far behind the U.S. and other more developed countries, making it difficult to transport goods into and out of those countries. This combined with complex and stringent customs regulations within these countries, does make it difficult to take advantage of a globalized economy." (Hickey, 2003, 41)

### Banking and Security

Electronic Funds Transfer is an assumed aspect of B2B and B2C e-commerce. Yet EFT requires an advanced banking system, good general security, and a developed legal environment. All three can be significant problems in developing countries as noted by a variety of other studies. Pare's study of B2B e-hubs showed very limited use of electronic payment systems with just 12% of agricultural exchanges and 3% of apparel exchanges describing electronic funds transfer as the primary means of payment (Pare, 2003). SMEs in Nepal listed the inability of local banks to handle electronic payments as a significant barrier to international sales (Wresch, 2003). In China, the use of credit cards and EFT is growing, is but still a tiny portion of the population. While 140 million bank cards are in use, this is just 11% of the population, and businesses report significant problems with authorizations, electronic signature, timely movement of funds, and poor internet security (Chen, 2002). As of 2002, no Egyptian bank offered secure electronic transactions, only 14,700 stores in the country accepted credit cards, and the legal foundations for electronic transactions were non-existent (Kamel, 2002).

E-commerce security aggravates an already difficult situation. All one needs to enter e-commerce is a website, but since websites can be created and abandoned at a moment's notice, fraud becomes far easier than in other forms of business (Oxley, 2001). Such security concerns are of course aggravated in countries without the necessary legal structures. A survey of companies in Malaysia found that 70% believed security was the most important barrier to e-commerce (Alijifri, 2003). A United Nations report states it directly: "The need for a legal infrastructure supportive of and conducive to e-business activities constitutes one of the main issues that policy makers should address when defining an ICT strategy." (UNCTAD, 2003, p75)

### RESEARCH QUESTIONS

The impediments to e-commerce efforts in developing countries are well documented. The purpose of this study was to look at these impediments in the Caribbean context and to ask two research questions. 1- Are the kinds of IT shortcomings that hamper e-commerce in developing countries also present in the Caribbean countries studied? 2- If leading companies have been able to overcome these barriers, what means did they use? Since a recent report from the United Nations Conference on Trade and Development (UNCTAD, 2003) listed lack of knowledge of best practice in the use of ICT as the first deficiency

that policy makers in developing countries must address, could we elicit some of those best practices from executives we interviewed?

## METHODS

The principal investigators conducted interviews in five countries: Trinidad and Tobago, Guyana, Antigua and Barbuda, Barbados, and Jamaica. These countries were selected because they represent a cross-section of developing nations in the region, from the relatively advanced nation of Trinidad and Tobago, to one of the poorest nations in the hemisphere, Guyana.

21 companies were visited. Interviews lasted from one to two hours, and were generally conducted with the chief executive officer of the company, although in several cases we spoke with the manager leading the e-commerce efforts. Interviews were always held at the company headquarters. In many cases we were given a tour of the premises subsequent to the interview.

Additionally, fifteen government or non-government agencies supporting business development were interviewed. These agencies helped identify lead businesses for our research and provided general background on the local business climate and on governmental efforts to support business.

While twenty-one companies were interviewed, this should not imply that only twenty-one companies in these five countries are engaged in e-commerce. There are certainly many other companies that are finding new sources of revenue by this means. However, the twenty-one companies interviewed were the ones that were repeatedly mentioned by third-parties as being active in this approach to business.

## RESULTS

### E-commerce Activity Levels

The involvement with e-commerce activities varied widely. For many companies e-commerce represented less than 20% of their total sales. For other companies the majority of their sales came through this channel. We also found a range of product decisions being made, with some companies using the Internet for intangible goods (primarily tourism) while other companies were able to sell tangible products via e-commerce. The fact that a number of companies were able to use this channel for the sale of intangible goods is no surprise and matches the results of prior studies that indicate the advantages of such products. What we found more surprising was the number of companies that persisted in selling tangible goods despite the known difficulties such efforts generate. While well aware of the difficulties found in exporting products, several leading companies found ways around common barriers. One novel approach we discovered was "reverse retail," where companies sell goods online to one member of an extended family who may be living in the U.S., but deliver the goods to local family members. Examples of this ranged from gift items to such staples as food and household appliances. It enabled successful family members to help their relatives, while avoiding the costs of making money transfers.

Table 2 describes the nature of the product, various business approaches being used by the companies we interviewed, and also describes the portion of their business being garnered through e-commerce. As can be seen by the table, successful companies are using a variety of strategies.

Nature of Product	Primary Customer Focus	Support (Less than 20 % of sales through channel)	Intermediate (20 to 60 % of sales through channel)	Developed (60 to 100% of sales through channel)
Physical/Tangible	Final Consumer (B2C)	Farfan and Mendes Super Plus Food Stores		Shopatbarbados Carib Buy
	Business (B2B)	Sacha Cosmetics Susie's Hot Sauce Walkerswood Ajoupa Pottery Starfish Oils Anne's craft center		
Digital/Intangible	Final Consumer (B2C)	Jolly Beach Hotel Sandy Beach Hotel Poison Mas Camp	Dolphin Cove Hotel Golden eye Hotel	Catamaran Hotel Caralodge Wilderness Explorers Raddison Hotel
	Business (B2B)			DirecOne

**Table 2. Companies visited and e-commerce approach attempted**

### Telephony and Internet Access

A common complaint focused on local telecommunications services. Every business described recent improvements in service and reductions in cost. However, many felt that even with these improvements, service was still not up to “first world” standards and that costs were still too high. None of these problems were an insurmountable barrier to e-commerce. Every company was able to get an email account and get a telephone line. Most were able to get both with a minimum of waiting. The current infrastructure level could best be described as a “nuisance” rather than a problem.

### Site development and hosting

We found that all but three companies we visited were hosting their web site in the U.S. or Europe. A few had initially launched their web site locally, but they found that local hosting services were slower, more expensive, and less reliable. There were sufficient internet support companies to help with web site design, and local hosting was available, but prices are so much lower in the U.S. that all web sites were moved there within months of launch. None of the executives who were using foreign hosting services described this situation as a significant barrier to their business. They were all comfortable with the remote hosting service they were using.

### Web site visibility on search engines

While many executives we spoke with were aware of the need to be visible on search engines, not all had invested time and money to ensure that their company was prominently listed in the major directories and search engines. Those that made the investment reported positive results both in terms of sales as well as brand development. Often this was a point of pride. The owner of Wilderness Explorers (Guyana) said “The web puts us and the big guys on a level playing field. My web site might be number one, and his number two.” Another executive of a Trinidadian cosmetics company said “Where are Maybelline and Revlon on the search engines? People judge you by the company you keep, online and off-line. This (E-commerce) give you a chance to swim with the big boys.” These executives could then explain strategies they had used to achieve their desired position on search engines. Sometimes they had purchased that knowledge, but often they had studied the problem on their own.

But not all executives had addressed web site visibility. Nearly one third had not put much effort into making their web site visible, and they were facing the consequences with lower sales. This seemed to be one place where management knowledge was still lacking.

### Logistics

Logistical problems were as challenging for these companies as the literature would have suggested, and in fact they face all the traditional problems with mail service, expensive couriers, and customs delays, plus a new problem – the increased vigilance of U.S. customs officials since the September 11 attacks. As one Trinidad executive put it, “Homeland security really put a spanner in everyone’s works. America is affecting the globe. We courier via FedEx to Paris. It has to go through Atlanta to be transshipped. So US Food and Drug Administration rules apply. T-shirts with the word “Cuba” on them are confiscated.” Another executive described the destruction of a shipment of candles intended for a Hollywood actress. To check for contraband, the candles were drilled into and broken into pieces. The shipment was destroyed and the order and goodwill lost.

Exporting companies that we interviewed took one of three responses to this problem. One company had simply stopped shipping to the U.S. The process was so time consuming and required so much paperwork, with no guarantee that products would not be destroyed in transit, they stopped selling to the U.S. and looked to alternative markets in the Caribbean. Two of the larger companies determined that the best way to approach the U.S. market was to establish a distribution center there. This allowed them to ship in bulk, and to have fewer encounters with U.S. customs. Once stocked in the U.S., individual orders could be filled quickly and shipped using U.S. courier companies.

The third response was to sell to the Caribbean Diaspora living in the U.S. who might want to purchase goods on behalf of friends and relatives still living in the Caribbean. Businesses would use word of mouth or advertise in on-line newspapers that were popular with overseas community, and accept credit card payment for goods that would then be picked up by relatives. This had advantages for both the company and the customer. For the company, logistical barriers no longer existed – local customers picked up goods at local stores. For customers it was a way to transfer money to relatives back home and escape the charges of wire transfer companies like Western union, and also be sure that the money going back home was used for food or necessary goods and not frittered away.

### Banking and security

Electronic payment systems were a commonly listed problem. Local banks, while offering many modern banking facilities, have been unwilling to invest in the systems needed to handle online payment. These banks seemed to believe that there are not enough online merchants in the Caribbean to warrant this investment. The local banks also faced the risk and potential losses that stem from fraudulent online transactions. As a result, the only available online merchant account service in Trinidad required payment to a local bank for funds transfer, and to a bank in Bermuda for account authorization. Many found the combined fees unattractive.

Executives we spoke with had found several workarounds in response to the limited banking services available. One company had an account at a U.S. bank and took orders on line, but then advised customers to phone a number in the U.S. where their credit card number could be taken and authorization processed. Once this work had been done in the U.S., the order could be taken in Trinidad. Another company could take the order on-line, but required a form to be printed out, signed, and then faxed. The local bank would accept the fax for processing. By far the most common solution to this problem however is to print the online order and manually re-enter into a conventional credit card point of sale terminal. This works well with small volumes but becomes burdensome when orders grow. While these approaches worked, they were seen as less than optimal, and were uniformly noted as the weakest point in their e-commerce efforts.

### DISCUSSION

An extensive literature on e-commerce efforts in the developing world has shown there are significant barriers to success. The executives we interviewed were all struggling with those barriers, but had found responses to at least some of them. Internet access had been easily addressed by all executives. The local phone service was never a feature of great pride, but at least it seemed adequate. This may have been helped by the fact that these managers were only using the local phones for simple email connections. The more demanding bandwidth requirements of web sites were being handled by web hosting services in the U.S. and U.K. The fact that their sites were in a foreign country seemed to pose no problems for the executives we surveyed, but of course the situation indicates that shortcomings in local telephony infrastructure still exist. Additionally, payments that might be made to local hosting providers or local telephone companies are instead going out of the country and so are not available to help develop the local infrastructure.

The problem with web site visibility drew a significant range of responses from these companies and may indicate an area where education could be helpful. While some executives were able to understand the major search engine processes, others had difficulty and faced the expected result – little traffic and little economic benefit from their site. Local educational institutions could do well to offer short-courses, workshops, and consulting for their business community. This would seem one of the most direct and least expensive services agencies might provide to the business community.

Logistics is a much more complicated barrier to address. For businesses such as tourist sites, there is nothing physical to ship, so this is never an issue. This fact alone might encourage agencies to work first with such businesses – they have one less problem to deal with. As for those companies that actually ship a product, it appears that some companies that are large may be positioned to ship large quantities at reasonable costs, but smaller companies might do well to simply advertise products on their web site as a way of selling items in advance to tourists who might be visiting, or to expatriates who might be buying on behalf of local family and friends. For most SMEs, the potential of selling and shipping directly to consumers anywhere in the world just seems too fraught with problems under current conditions.

Banking conditions create a second barrier to SMEs trying to ship products to a world-wide customer base. Transaction fees are high and are only available after paying account-creation fees that can easily exceed potential short-term revenues. This survey was unable to find any small enterprise that had overcome this barrier. It would be helpful if other researchers in this field could find banking models that were more supportive of small business people in developing countries.

As for best practices, the approach that surprised us most was the “reverse retail” or “indirect retail” approach that used the expatriate community as purchasers on behalf of local citizens. It would be helpful to know if other studies in other parts of the world find similar approaches. There are large numbers of expatriate workers all over the world who are sending money back home. Are other businesses in their home countries also directing advertising at them? Additional research in this area would seem helpful. This seems a business model that could be adopted by a large number of “home” businesses.

All in all, we found that well-known technical barriers to ecommerce still exist in the Caribbean countries we surveyed, but that there are promising business models and persistent executives who are able to overcome at least some of these barriers.

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